Claims:

Claims 32, 45, and 58 are hereby CANCELED.
Independent claims 1, 39, and 52 are amended.

Please amend the claims as follows:

1. (AMENDED) A catheter for use in pelvic angiographic procedures comprising: a primary curve; a first tapered section; a secondary curve; and a second tapered section; and wherein the second tapered end section has at least one curve.

2. The catheter of claim 1 formed from a group of plastics that includes polyurethane, polyethylene and polyether block amide copolymer.

3. The catheter of claim 1, wherein the second tapered section tapers from an inner diameter of 0.035 inches to 0.018 inches, and wherein the outer diameter tapers from 4 french to 3 french.

4. The catheter of claim 1, wherein the overall length of the catheter is between 76 cm and 87 cm.

5. The catheter of claim 1, wherein the length from the primary curve to the secondary curve is between 14 cm and 17 cm.

6. The catheter of claim 1, wherein the length from the secondary curve to the catheter tip is between 3 cm and 8 cm.

7. The catheter of claim 1, wherein the start of the first tapered section begins between 2.0 cm and 3.0 cm beyond the primary curve, and wherein the taper is from an inner diameter of 0.038 inches to 0.035 inches and an outer diameter of 5 french to 4 french.

8. The catheter of claim 1, wherein the start of the second tapered section begins between 0.5 cm and 1.5 cm from the secondary curve.

9. The catheter of claim 1, wherein the overall length of the second tapered section is between 2.0 cm and 8.0 cm.

10. The catheter of claim 1, wherein the radius of the primary curve is between 1.0 cm and 1.2 cm, and wherein the angle of said primary curve is within a range between 180 and 420 degrees.

11. The catheter of claim 10, wherein the angle of said primary curve is 360 degrees.

12. The catheter of claim 1, wherein the angle of the secondary curve is between 90 and 100 degrees from the shaft.

13. The catheter of claim 1, wherein the catheter is formed from a braided material.

14. The catheter of claim 13, wherein the braided material is from a group that includes stainless steel.

15. The catheter of claim 1, wherein the catheter is impregnated with a radioopaque material.

16. The catheter of claim 15, wherein the radioopaque material is from a group that includes tungsten.

17. The catheter of claim 1, wherein the first tapered portion is made from a group of materials that include a polyether block amide copolymer.

18. The catheter of claim 1, wherein a hydrophilic coating is employed.

19. The catheter of claim 18, wherein the hydrophilic coating coats at least a portion of the catheter from the origin of the first tapered section to the tip.

20. The catheter of claim 1, including a hub at its origin.

21. The catheter of claim 20, wherein the length from the origin of the hub to the primary curve is between 59 cm and 62 cm.

22. The catheter of claim 20, wherein the hub is 1.0 to 2.0 cm in length and has an inner luminal diameter of 0.038 inches.

23. The catheter of claim 20, wherein the hub consists of polyurethane.

24. The catheter of claim 20, wherein the hub has an inner luminal diameter of 0.038 inches.

25. The catheter of claim 1 or 20, wherein a straightener extends on the outside of the catheter over a length between 2.0 cm and 3.0 cm.

26. The catheter of claim 25, wherein the straightener is made of polyurethane.

27. The catheter of claim 25, wherein the straightener is removeable.

28. The catheter of claim 1 or 20, wherein the second tapered section is formed from a flexible material.

29. The catheter of claim 1 or 20, wherein the second tapered section is formed from an elastic material.

30. The catheter of claim 1 or 20, wherein the second tapered section is formed from a soft material.

31. The catheter of claim 1 or 20, wherein the second tapered section is formed from a germ-retarding material.

32. (CANCELED) (The catheter of claim 1 or 20, wherein the second tapered end section has at least one curve.)

33. The catheter of claim 1 or 20, wherein the thickness of the walls of the second tapered section changes along its length.

34. The catheter of claim 1 or 20, wherein the length of the second tapered section is at least 0.5 cm.

35. The catheter of claim 1 or 20, wherein the length of the second tapered section is variable.

36. The catheter of claim 1 or 20, wherein the second tapered section is detachable.

37. The catheter of claim 1 or 20, wherein the second tapered section is formed separately from the rest of the catheter.

38. The catheter of claim 1 or 20, wherein the second tapered section is formed separately from the rest of the catheter and includes attachment means for removably attaching to the secondary curve.

39. (AMENDED) A catheter including a tapered end section; wherein the tapered end section has at least one curve.

40. The catheter of claim 39, wherein the tapered end section is formed from a flexible material.

41. The catheter of claim 39, wherein the tapered end section is formed from an elastic material.

42. The catheter of claim 39, wherein the tapered end section is formed from a soft material.

43. The catheter of claim 39, wherein the tapered end section is formed from a germ-retarding material.

44. The catheter of claim 39, wherein the tapered end section is formed from a braided material.

45. (CANCELED) (The catheter of claim 39, wherein the tapered end section has at least one curve.)

46. The catheter of claim 39, wherein the thickness of the walls of the tapered end section changes along its length.

47. The catheter of claim 39, wherein the length of the tapered end section is at least 0.5 cm.

48. The catheter of claim 39, wherein the length of the tapered end section is variable.

49. The catheter of claim 39, wherein the tapered end section is detachable.

50. The catheter of claim 39, wherein the tapered end section includes attachment means for removably attaching to a tip of the catheter.

51. The catheter of claim 39, wherein the tapered end section tapers from an inner diameter of 0.035 inches to 0.018 inches, and wherein the outer diameter tapers from 4 french to 3 french.

52. (AMENDED) A tapered end section for a catheter; wherein the tapered end section has at least one curve.

53. The catheter of claim 52, wherein the tapered end section is formed from a flexible material.

54. The catheter of claim 52, wherein the tapered end section is formed from an elastic material.

55. The catheter of claim 52, wherein the tapered end section is formed from a soft material.

56. The catheter of claim 52, wherein the tapered end section is formed from a germ-retarding material.

57. The catheter of claim 52, wherein the tapered end section is formed from a braided material.

58. (CANCELED) (The catheter of claim 52, wherein the tapered end section has at least one curve.)

59. The catheter of claim 52, wherein the thickness of the walls of the tapered end section changes along its length.

60. The catheter of claim 52, wherein the length of the tapered end section is at least 0.5 cm.

61. The catheter of claim 52, wherein the length of the tapered end section is variable.

62. The catheter of claim 52, wherein the tapered end section is detachable.

63. The catheter of claim 52, wherein the tapered end section includes attachment means for removably attaching to a tip of the catheter.

64. The catheter of claim 52, wherein the tapered end section tapers from an inner diameter of 0.035 inches to 0.018 inches, and wherein the outer diameter tapers from 4 french to 3 french.

Remarks:

First I would like to thank the examiner for granting me the telephone interview of November 30th, 2006 and for being so very courteous. During this interview, we discussed the mechanical and functional differences between the art of record (Engelson et al., U.S. Patent Number 6,030,369) and the instant invention. The examiner and I agreed that the basic difference is that Engelson does NOT incorporate a "curve" within his end/tip section (member # 102) as is disclosed within the instant application and claims (as section/member #103).

The reason why this curve in the end section of the instant invention is so important is that it facilitates catheterization of the bilateral uterine arteries (or any other pelvic arterial branch) while minimizing trauma and damage to the arteries. Trauma to these vessels can lead to an adverse clinical event and/or prevent completion of an important endovascular therapy. The unique and distinct anatomy and physiology of the uterine arteries are what initially resulted in the idea for the invention. The primary and secondary curves (Figure 1, sections 104 and 105) allow bringing the catheter tip into proximity to the preferred artery. The distal tip of the catheter (Figures 1 and 2, section 103) requires at least one curve in order to allow catheterization of the uterine arteries as they frequently arise at a very acute angle from the anterior division of the internal iliac artery. One catheterizes an artery most safely over a guidewire to minimize trauma, as the hollow end of a catheter can cause dissection easily (i.e. the lifting of the intima, or lining, of the artery). When one relies solely on the guidewire to catheterize a uterine artery it's shape/angle alone may not be sufficient because of the anatomic angle from which the origin of the artery arises and may result in vessel damage (dissection and/or perforation and/or spasm) as a result of passing the wire over the origin of the artery numerous times without successful engagement, or the wire will engage the artery but not allow the catheter to track over it. The tip of Engelson's invention, section 102, lacks a curve and thus will NOT perform adequately when compared to my invention as it would rely solely upon the guidewire to catheterize the blood vessel, not the shape of the tip of the catheter. This would allow increased traumatic forces to be

applied to the artery as there is no inhibiting curve to reduce the force from the guidewire leaving the catheter and engaging the surface of the artery. The curve within the distal tapered end section in my invention not only allows catheterization but it will reduce the force of the guidewire leaving the tip of the catheter and thus minimize damage to the blood vessel. THIS IS A DISTINCT MECHANICAL ADVANTAGE OVER ENGELSON. Depending on the anatomic location one wishes to leave the catheter for therapy, the tip (section 103) can have one or several curves, depending on the length of the tip which, as I have revealed, can be variable. The uterine artery has a descending, horizontal and ascending portion and the configuration of this artery would govern which is the most appropriate tip configuration to utilize. For these reasons, it is a definite and important mechanical advantage and advancement in the field and an improvement over the prior art. Therefore, the Section 102 rejections to claims 32, 45, and 58 applied by the examiner should be immediately withdrawn since not every single element of the claims is disclosed by the prior art (Engelson et al., U.S. Patent Number 6,030,369).

As set forth in the amendments to the claims (above), the claims (32, 45, and 58) that are drawn to the "curve" in the end/tip section have been canceled and these limitations added to their appropriate independent claims (1, 39, and 52) respectively. Therefore the claims as amended overcome the prior art of record and should immediately be allowed.

If during an "update search" the examiner discovers different art that he feels discloses a "curved section" within an "end/tip section" of a catheter (that performs the SAME function and provides the SAME advantages as disclosed by the instant application) and feels it would have been "obvious" to modify the disclosed prior art of Engelson to incorporate a "curved end/tip section", the examiner is reminded that any new rejections made by an examiner using prior art that has NOT already been set forth by the examiner necessitate the resulting action must be made "NON-FINAL". The applicant also takes the position that modifying Engelson to incorporate ANY curved portions within his end/tip section would "DESTROY" the functionality of Engleson, and thereby would NOT perform as designed.

For the reasons stated along with the amendment herein, the applicant respectfully requests an immediate allowance of the instant claims. The examiner is also invited TO CALL THE APPLICANT if the examiner concludes that certain additional claim language would result in an immediate allowance.

One last comment, as a matter of industry fact: the technology surrounding this invention is advancing so fast that the window of opportunity to make any profit will be closing within the next 36-48 months. I, the applicant, already have waited nearly three years (35 months from the filing date) to receive a "first action" on the merits (when the goal, and average, of the Patent Office is 18 months). I ask so kindly that the examiner expedite this response and application as speedily as possible so as to obtain an allowance in time to make a difference in the medical community and field, and to be rewarded appropriately.

Claims (clean set):

1. A catheter for use in pelvic angiographic procedures comprising: a primary curve; a first tapered section; a secondary curve; and a second tapered section; and wherein the second tapered end section has at least one curve.

2. The catheter of claim 1 formed from a group of plastics that includes polyurethane, polyethylene and polyether block amide copolymer.

3. The catheter of claim 1, wherein the second tapered section tapers from an inner diameter of 0.035 inches to 0.018 inches, and wherein the outer diameter tapers from 4 french to 3 french.

4. The catheter of claim 1, wherein the overall length of the catheter is between 76 cm and 87 cm.

5. The catheter of claim 1, wherein the length from the primary curve to the secondary curve is between 14 cm and 17 cm.

6. The catheter of claim 1, wherein the length from the secondary curve to the catheter tip is between 3 cm and 8 cm.

7. The catheter of claim 1, wherein the start of the first tapered section begins between 2.0 cm and 3.0 cm beyond the primary curve, and wherein the taper is from an inner diameter of 0.038 inches to 0.035 inches and an outer diameter of 5 french to 4 french.

8. The catheter of claim 1, wherein the start of the second tapered section begins between 0.5 cm and 1.5 cm from the secondary curve.

9. The catheter of claim 1, wherein the overall length of the second tapered section is between 2.0 cm and 8.0 cm.

10. The catheter of claim 1, wherein the radius of the primary curve is between 1.0 cm and 1.2 cm, and wherein the angle of said primary curve is within a range between 180 and 420 degrees.

11. The catheter of claim 10, wherein the angle of said primary curve is 360 degrees.

12. The catheter of claim 1, wherein the angle of the secondary curve is between 90 and 100 degrees from the shaft.

13. The catheter of claim 1, wherein the catheter is formed from a braided material.

14. The catheter of claim 13, wherein the braided material is from a group that includes stainless steel.

15. The catheter of claim 1, wherein the catheter is impregnated with a radioopaque material.

16. The catheter of claim 15, wherein the radioopaque material is from a group that includes tungsten.

17. The catheter of claim 1, wherein the first tapered portion is made from a group of materials that include a polyether block amide copolymer.

18. The catheter of claim 1, wherein a hydrophilic coating is employed.

19. The catheter of claim 18, wherein the hydrophilic coating coats at least a portion of the catheter from the origin of the first tapered section to the tip.

20. The catheter of claim 1, including a hub at its origin.

21. The catheter of claim 20, wherein the length from the origin of the hub to the primary curve is between 59 cm and 62 cm.

22. The catheter of claim 20, wherein the hub is 1.0 to 2.0 cm in length and has an inner luminal diameter of 0.038 inches.

23. The catheter of claim 20, wherein the hub consists of polyurethane.

24. The catheter of claim 20, wherein the hub has an inner luminal diameter of 0.038 inches.

25. The catheter of claim 1 or 20, wherein a straightener extends on the outside of the catheter over a length between 2.0 cm and 3.0 cm.

26. The catheter of claim 25, wherein the straightener is made of polyurethane.

27. The catheter of claim 25, wherein the straightener is removeable.

28. The catheter of claim 1 or 20, wherein the second tapered section is formed from a flexible material.

29. The catheter of claim 1 or 20, wherein the second tapered section is formed from an elastic material.

30. The catheter of claim 1 or 20, wherein the second tapered section is formed from a soft material.

31. The catheter of claim 1 or 20, wherein the second tapered section is formed from a germ-retarding material.

32. (CANCELED)

33. The catheter of claim 1 or 20, wherein the thickness of the walls of the second tapered section changes along its length.

34. The catheter of claim 1 or 20, wherein the length of the second tapered section is at least 0.5 cm.

35. The catheter of claim 1 or 20, wherein the length of the second tapered section is variable.

36. The catheter of claim 1 or 20, wherein the second tapered section is detachable.

37. The catheter of claim 1 or 20, wherein the second tapered section is formed separately from the rest of the catheter.

38. The catheter of claim 1 or 20, wherein the second tapered section is formed separately from the rest of the catheter and includes attachment means for removably attaching to the secondary curve.

39. A catheter including a tapered end section; wherein the tapered end section has at least one curve.

40. The catheter of claim 39, wherein the tapered end section is formed from a flexible material.

41. The catheter of claim 39, wherein the tapered end section is formed from an elastic material.

42. The catheter of claim 39, wherein the tapered end section is formed from a soft material.

43. The catheter of claim 39, wherein the tapered end section is formed from a germ-retarding material.

44. The catheter of claim 39, wherein the tapered end section is formed from a braided material.

45. (CANCELED)

46. The catheter of claim 39, wherein the thickness of the walls of the tapered end section changes along its length.

47. The catheter of claim 39, wherein the length of the tapered end section is at least 0.5 cm.

48. The catheter of claim 39, wherein the length of the tapered end section is variable.

49. The catheter of claim 39, wherein the tapered end section is detachable.

50. The catheter of claim 39, wherein the tapered end section includes attachment means for removably attaching to a tip of the catheter.

51. The catheter of claim 39, wherein the tapered end section tapers from an inner diameter of 0.035 inches to 0.018 inches, and wherein the outer diameter tapers from 4 french to 3 french.

52. A tapered end section for a catheter; wherein the tapered end section has at least one curve.

53. The catheter of claim 52, wherein the tapered end section is formed from a flexible material.

54. The catheter of claim 52, wherein the tapered end section is formed from an elastic material.

55. The catheter of claim 52, wherein the tapered end section is formed from a soft material.

56. The catheter of claim 52, wherein the tapered end section is formed from a germ-retarding material.

57. The catheter of claim 52, wherein the tapered end section is formed from a braided material.

58. (CANCELED)

59. The catheter of claim 52, wherein the thickness of the walls of the tapered end section changes along its length.

60. The catheter of claim 52, wherein the length of the tapered end section is at least 0.5 cm.

61. The catheter of claim 52, wherein the length of the tapered end section is variable.

62. The catheter of claim 52, wherein the tapered end section is detachable.

63. The catheter of claim 52, wherein the tapered end section includes attachment means for removably attaching to a tip of the catheter.

64. The catheter of claim 52, wherein the tapered end section tapers from an inner diameter of 0.035 inches to 0.018 inches, and wherein the outer diameter tapers from 4 french to 3 french.

The examiner, again, is invited to contact the applicant at any time to discuss the application in order to expedite the prosecution as quickly as possible.

Courteously yours,

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